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I write about Mega Trends and Future of Mobility

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Uber Acquiring Otto Could Be The Lead Domino: Autonomous Vehicles To Spur M&A Activity



A man walks past an Uber station outside a shopping mall in Beijing on August 1, 2016. Ride-sharing giant Uber is to merge its China operations with local rival Didi Chuxing, reports said on August 1, ending a ferocious battle for market share in the world's second-largest economy. STR/AFP/Getty Images



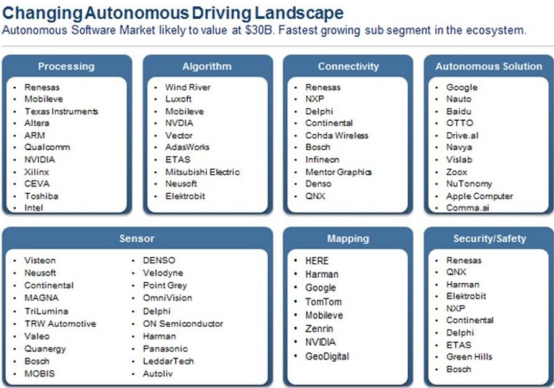
We might be a few decades away from a future where driving licenses cease to exist, but autonomous driving is fast approaching and transforming the way we commute. Personally, I believe that self-driving cars is the next internet, a technology that will radically change every element of our day-to-day living. Today, it is not unrealistic to envision a future where an on-demand driverless pod picks you up from a location upon being summoned, while ensuring that your professional calendar and music preferences are preset even before you enter.

From an industry stand point, the biggest impact of this technology, beyond the plethora of new business streams it opens, is the possible disruption of the existing traditional value chain. Recent news of highest valued start-up, Uber investing north of \$600 million into another tech

start-up Otto for developing autonomous technology for future mobility solutions paint a picture far different from how autonomous driving is perceived and developed today in the automotive industry. While Otto’s vision of developing self-driving modules for the truck fleets is in line with the future Travis Kalanick envisions for Uber, one of the keys to this acquisitions could be the LIDAR systems that was developed in-house at Otto.

Herein lays the underlying crux of where the industry stands at the moment in terms of autonomous driving development and problem solving. The growing pace of innovation and barriers posed by segmented product development has now forced todays’ traditional suppliers and OEMs to seek an inorganic approach to research leading to a new wave of partnerships and mergers in the short term.

Having said that, the ‘golden question’ is what partnerships make most logical sense and adds sufficient strategic value to justify the investment? The answer to that lies in the three key pillars of autonomous driving, the software, the hardware and the interface. Any company’s positioning in this eco system will rely on at least one of these three enablers and any partnership will need to strengthen this philosophy to be a step in the right direction.



Source: Frost & Sullivan, Vision Systems Intelligence

A look back at some of the key M&As in the industry of late will shine light to this pattern. Continental is one of the suppliers who have been swift in identifying some of the white spaces in their portfolio that needed to be addressed to realign their vision for the future. Their move for autonomous software developer Elektrobit and LIDAR sensor developer Advanced Scientific Concepts, Inc. are ideal examples where they

have addressed the lack of their capabilities in the software and hardware pillars respectively. Continental will still need significant investment in their vision enhancement division if they are to position themselves as an end-to-end autonomous technology supplier, but they are indeed in the right direction to do so.

Another very interesting and likely successful approach is that of chassis-safety consolidation. In an effort to be a consolidator in the autonomous eco systems, ZF acquired TRW to improve their core safety functionalities, invested in IBEO for venturing into LIDAR technology and recently bid for brake maker Haldex AB to extend their chassis capabilities. We will also likely see ZF skimming down some of their current assets to better their credit rating, in order to kick start the next expansion campaign.

Going forward, having assessed the strengths, weaknesses and future trends in the industry, there has emerged three key avenues that will see the most significant investment leading to future autonomous driving programs.

1. The first will revolve around autonomous algorithm development, which looks at programming end-to-end enabling software for deploying autonomous functionalities. This will likely be the larger M&A targets, primarily due to their execution potential, and most OEMs and tier one suppliers in this space can today benefit from this vertical integration capability. The strongest growth opportunity and 'gold mine' in the autonomous space currently lies here. Companies like nuTonomy, Drive.ai, Oxobotica, Zoox, Nauto and ADASWorks and many more are all very strong players in this space with very lucrative value proposition and technology edge that they bring to the market.
2. Another element within algorithm development that would be pivotal in autonomous software will be that of deep learning and digital image processing. The need for exponential increase in processing capability and improving image assessment quality will force developers to look into deep learning and AI based image recognition companies. Currently, NVIDIA has an upper hand in this market due to their expertise in parallel industries, but start-ups like

TeraDeep, Lunit and Indico have strong prospects outside of the automotive industry and it is only a matter of time, their skills are utilized for automotive purposes.

3. A third promising prospect or an immediate growth opportunity in this space is within infotainment. As one of the three main enabling pillars, interfaces emphasize on the seamless interaction between the car and the commuter. Potential future aggregators like Bosch, Continental and ZF currently have minimal to no exposure to this market; This could be a very lucrative space to enter, considering the multitude of opportunities presently unearthed within the cockpits of the future as revenue and more importantly, data generating nodes. Currently companies like Harman, Delphi and Visteon, who today are dominant players in the infotainment market, could be cause for consolidation in the industry, as lines of distinction between autonomous and connectivity systems, blur going forward. Nevertheless, there are also many innovative start-ups in this space like Israeli start up BNC, and some American innovators like Navdy, High Mobility, Mojio, Movimento, iNago and many more provide customer-centric products that can prove to be valuable data nodes in the future, thereby being ones to watch out for as well.
4. A smaller yet by no means insignificant market avenue will likely be around precision positioning. As soon as high definition mapping rolls out to production vehicles, the need for centimetre level accuracy in positioning objects will be essential, forcing companies to invest in one of many position error correcting technologies. Companies like SwiftNav and Exo Technologies stand to benefit here.
5. Finally, there is a plethora of aftermarket solutions currently floating around in the market for connected and autonomous features. Though this is a crowded space with many solutions that could fizzle out in the short term, there are a few interesting companies like CloudCar, Vinli, Nauto, and Navya that provide solutions that will benefit today's

suppliers and OEMs to expand their horizons.

Even beyond these technologies, there are likely to be many more avenues for opportunities in autonomous driving, driven by this unparalleled need for expanding capabilities, which will ultimately lead to a new level of consolidation in the automotive industry. Yet without valuing the booming service industry relying on autonomous driving, a market valuation of over \$70 billion USD by 2025 is too lucrative an opportunity for any company to shy away from. The key is to understand the future value chain, position your organization the best fit way and address the white spaces to fulfill that roadmap. While there are many more automotive start-ups and SMEs than ever before, the right fit organizations are still hard and short to find and the 'golden ticket' to success here is to act predictive rather than reactive!

This article was written with contribution from Arunprasad Nandakumar, Senior Analyst from Frost & Sullivan's Mobility Team and Program Leader of Chassis, Safety and Autonomous Driving Program.

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